

KHURRAM VALIYEV

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Education

Florida Institute of Technology

Bachelor of Science in Software Engineering

January 2023 - May 2026

Melbourne, Florida

Research Experience

High Energy Physics Lab, Florida Institute of Technology | *Python, ROOT, NumPy, Data Analysis* **2025 - Present**
Undergraduate Research Volunteer *Melbourne, Florida*

- Optimized existing data processing codebase, reducing execution time from 6 hours to 5 minutes
- Develop hit/cluster reconstruction algorithms and visualization tools to validate detector response and support ongoing experiments
- Automate data analysis pipelines using summary metrics and plots to tune thresholds and streamline internal reporting

Leadership & Experience

Student Developer Club, Florida Tech | *Leadership, Community Building, Public Speaking* **2025 - Present**
Founder & President *Florida Institute of Technology*

- Founded and lead a student developer community focused on project-based learning, demos, and software skills
- Organize peer code reviews, club projects, and project showcases across web, mobile, and AI/IoT builds
- Mentor students on shipping MVPs, debugging workflows, and bridging coursework with real-world engineering

World Scholar's Cup @ Yale | *Coaching, Mentoring* **2025**
Coach & Delegation Supervisor *Yale University, Connecticut*

- Coached a student delegation at the Tournament of Champions (ToC) at Yale University, leading the team to secure 20+ awards across multiple academic events
- Mentored students through competitive debates and challenges, providing technical guidance and strategic feedback to help teams reach the final rounds
- Represented the student delegation in a high-level meeting with the Embassy of Azerbaijan to the United States during the Yale Global Cultural Fair

MATLAB Club, Florida Tech | *Teaching, Mentoring* **2023 - 2024**
Vice President *Florida Institute of Technology*

- Helped build and grow a MATLAB-focused community with over 50 members; taught fundamentals through hands-on labs and guided practice
- Supported student learning through tutoring sessions emphasizing clarity, repeatable problem-solving, and strong fundamentals

Arduino Tutor & Olympiad Supervisor | *Arduino, Embedded Systems, Sensors* **2021 - 2022**
Tunisia I FEST *Baku, Azerbaijan*

- Tutored 10+ students across 3 teams in embedded systems, Arduino programming, and sensor integration
- Supervised teams through the International Festival of Engineering and Technology; achieved multiple podium finishes including 2nd place (2x) and 3rd place awards

Projects

Sator | *ESP32, Arduino, Python* **2025**

- Mobile agricultural rover that moves through fields collecting soil moisture, NPK levels, temperature, humidity, and air quality data with live camera feed
- Integrated a multi-sensor array (NPK, soil moisture, air quality, light) and integrated an ESP32-CAM for live environmental monitoring into the rover
- Set up real-time data pipeline from ESP32 sensors to backend server; integrated an AI chatbot using Gemini API that answers questions about sensor readings

Garden Guardian | *ESP32, Python, Arduino* **2025**

- IoT system that monitors plant health using soil moisture, air quality, and light sensors, then sends data to the website to suggest care actions and monitor the plant
- Determined optimal sensor thresholds through testing on a real plant and developed a robust data pipeline for real-time web-based care suggestions

Receding Coastlines | *Python, HTML/CSS, JavaScript, Data Science* 2025

- Interactive web tool that models and visualizes how sea-level rise affects coastlines; users can adjust scenarios with sliders to see different outcomes
- Designed for non-technical audiences to understand climate risks; shows past coastlines and predicted future coastlines based on a machine learning model trained on past data
- Conducted data analysis to find where outliers are located and see how they affected our data set

Desk Display | *ESP32, Python, REST APIs, Sensors* 2025

- Small desk device powered by USB-C that shows weather, room temperature, humidity, and currently playing Spotify track on a small screen
- Integrates real-time weather and Spotify REST APIs, utilizing an interrupt-driven button interface to toggle display modes

TrafficLight++ | *Python, YOLO, Arduino, Solar Power* 2024

- Add-on device for traffic lights that uses computer vision to spot accidents and adjust signal timing to reduce congestion
- Worked with 2-person team on hardware design; added solar charging and remote control features for maintenance

CallBulance | *Arduino, Flex Sensors, GSM Module, Wireless Communication* 2019 - 2022

- Vehicle crash detector that uses flex sensors to detect impact and automatically dials emergency services with location
- Managed a team of five engineers over three years, leading the project from initial prototype to a fully functional MVP

SafeWave | *Arduino, Sensors, Prototyping* 2019

- Built a wearable device for offshore oil rig workers and people at the beach that detect falls into water and unsafe diving depths, then produces an alert sound via a buzzer
- Built in an MVP in under 6 months and iterated based on feedback from friends and mentors

Honors & Awards

- **2nd Place** - MakeCU Hackathon @ Columbia University (2025)
- **20+ Awards** - World Scholar's Cup TOC @ Yale (2025)
- **2nd Place (2x) & 3rd Place** - Tunisia I-FEST (2022)
- **1st Place** - BUCA International Music Science Energy Engineering Fair (2021)
- **Top 10 Project** - London International Youth Science Forum (2021)
- **4th Place** - KSEF (Korea Science and Engineering Fair International) (2019)
- **1st Place** - ABC Science Fair (Azerbaijan) (2019)
- **3rd Place** - CASTIC (China Adolescents Science & Technology Innovation Contest) (2019)

Research Interests

- Dedicated to developing intelligent, data-driven, embedded systems that bridge the gap between physical devices and digital insights to solve real-world challenges.
- **Areas:** Real-time Data Processing & Analysis, Internet of Things, Autonomous Sensing Systems, Wearable Technology, Human-in-the-Loop Safety Systems

Technical Skills

- **Languages:** Arduino, Java, Kotlin, Python, C, C++, JavaScript, MATLAB, HTML/CSS
- **Technologies/Frameworks:** Arduino, ESP32, Raspberry Pi, AWS, React, NumPy, Matplotlib, Pandas, Sensors, Embedded Systems
- **Tools & Methods:** GitHub, Figma, Soldering, Circuit Design, PCB Design, 3D Printing & Designing, Project Management, Team Leadership, Mentoring

Hackathons & Competitions

- MakeCU @ Columbia University - New York, NY (2025)
- KnightHacks VIII @ University of Central Florida - Orlando, FL (2025)
- ShellHacks 2025 @ Florida International University - Miami, FL (2025)
- Tunisia I-FEST (International Festival of Engineering and Technology) - Tunisia (2022)
- ESA (Expo Sciences Asia) - UAE (2022)
- BUCA International Music Science Energy Engineering Fair - Turkey (Remote) (2021)
- London International Youth Science Forum - London, UK (Remote) (2021)
- KSEF (Korea Science and Engineering Fair International) - South Korea (2019)
- ABC Science Fair - Azerbaijan (2019)
- CASTIC (China Adolescents Science & Technology Innovation Contest) - China (2019)